Attorney Docket No.: 100794-11444 (FUJI 17.390)

IN THE UNITED STATES PATENT AND TRADEMARK OFFICE
BOARD OF PATENT APPEALS AND INTERFERENCES

Appellant(s):	Shigefumi MASUDA Minoru ISHIDA
Serial No.:	09/589,142
Confirmation No.:	8638
Filed:	June 7, 2000
Title:	**DEVICE AND SYSTEM FOR REDUCING CONFLUENCE NOISE**
Examiner:	Annan Q. Shang
Group Art Unit:	2623

October 29, 2007

BRIEF FOR APPELLANTS

Board of Patent Appeals and Interferences
Assistant Commissioner for Patents
Washington, D.C., 20231

Sir:

A Notice of Appeal was filed on March 29, 2007. Appellants hereby petition for a five-month extension of time, a petition pursuant to 37 C.F.R. 1.136(a) and authorization to charge the requisite fee being enclosed. Appellants hereby appeal to the Board of Patent Appeals and Interferences from the Examiner's Decision, in the Official Action dated September 29, 2006, finally rejecting claims 1-7. All requisite fees, including those for this Brief set forth in 37 C.F.R. §41.20(b)(2), may be charged to Deposit Account No. 50-1290.

(i) Real party in interest

The real party in interest is Fujitsu Limited, a Japanese corporation with offices at 1-1, Kamikodaka 4-chome, Nakahara-Ku, Kawasaki-shi, Kanagawa 211-8588, Japan, to which Appellant has assigned all interest in, to and under this application, by virtue of an assignment as recorded at Reel 010858, Frame 0495 of the Assignment records of the U.S. Patent and Trademark Office.

(ii) Related appeals and interferences

Upon information and belief, there are no other appeals or interferences, which will directly affect or be directly affected by or have a bearing on the Board's decision in this appeal.

(iii) Status of claims

The application was filed on June 7, 2000, and claims foreign priority benefits under 35 U.S.C. §119 based on Japanese Application No. 11-159439 filed on June 7, 1999. The application was filed with claims 1-15.

In a first Office Action dated July 17, 2003, claims 1-5, 7, and 9 were rejected under 35 U.S.C. 102(b) as being anticipated by U.S. Patent No. 3,750,022 to Curry et al.; claims 11 and 13-15 were rejected under 35 U.S.C. § 103(a) as being unpatentable over Curry et al.; and claims 6, 8, 10, and 12 were rejected under 35 U.S.C. § 103(a) as being unpatentable over Curry et al. in view of U.S. Patent No. 6,385,773 to Schwartzman et al.

In a response to the first Office Action, filed on January 20, 2004, Appellants amended claims 1, 8, and 12.

In a final Office Action dated April 7, 2004, claims 1-5, 7, and 9 were rejected under 35 U.S.C. 102(b) as being anticipated by Curry et al.; claims 11 and 13-15 were rejected

under 35 U.S.C. § 103(a) as being unpatentable over Curry et al.; and claims 6, 8, 10, and 12 were rejected under 35 U.S.C. § 103(a) as being unpatentable over Curry et al. in view of Schwartzman et al.

In a response to the final Office Action, filed on September 7, 2004, Appellants amended claim 1 and canceled claims 8-15. Appellants filed a Request for Continued Examination ("RCE") on December 6, 2004 to enter the amendment to claim 1.

In a non-final Office Action dated March 23, 2005, claims 1-5 and 7 were rejected under 35 U.S.C. 102(b) as being anticipated by Curry et al.; and claim 6 was rejected under 35 U.S.C. § 103(a) as being unpatentable over Curry et al. in view of Schwartzman et al.

In a response to the non-final Office Action, filed on September 22, 2005, Appellants amended claim 1.

In a final Office Action dated December 19, 2005, claims 1-5 and 7 were rejected under 35 U.S.C. 102(b) as being anticipated by Curry et al.; and claim 6 was rejected under 35 U.S.C. § 103(a) as being unpatentable over Curry et al. in view of Schwartzman et al.

In a response to the final Office Action, filed concurrently with a RCE on March 17, 2006, Appellants amended claim 1.

In a non-final Office Action dated April 6, 2006, claims 1-5 and 7 were rejected under 35 U.S.C. § 103(a) as being unpatentable over Curry et al. in view of U.S. Patent No. 5,987,069 to Furukawa et al.; and claim 6 was rejected under 35 U.S.C. § 103(a) as being unpatentable over Curry et al. in view of Furukawa et al., and further in view of Schwartzman et al.

In a response to the non-final Office Action, filed on July 18, 2006, Appellants amended claim 1.

In a final Office Action dated September 29, 2006, claims 1-5 and 7 were rejected under 35 U.S.C. § 103(a) as being unpatentable over Curry et al. in view of Furukawa et al.;

and claim 6 was rejected under 35 U.S.C. § 103(a) as being unpatentable over Curry et al. in view of Furukawa et al., and further in view of to Schwartzman et al.

The status of the claims as set out in the final Office Action is:

Claims allowed: None

Claims objected to: None

Claims canceled: 8-15

Claims rejected: 1-7

The rejected claims are set out in the Appendix attached hereto.

The rejected claims are being appealed.

(iv) Status of amendments

Appellants' response filed on July 18, 2006, proffered before final rejection, has been considered. Appellants amended claim 1. Appellants did not otherwise cancel or amend any of the claims that are the subject of this appeal since the September 29, 2006 final Office Action.

(v) Summary of claimed subject matter

CATV systems for delivering television and corresponding added services commonly use a certain frequency band for downward signals directed from a cable-provider "center"—or a "Head End (HE)"—to user terminals—for example, cable boxes—and use a different frequency band for upward signals directed from the user terminals to the center. These signals are most often transmitted through coaxial cables or optical fiber cables to achieve

two-way communications. For such communications, a common problem has been the accumulation of what is known as confluence noise in the upward signals.

Downward signals transmitted from a center to user terminals may be split at splitters to go from a main transmission line to a plurality of branch transmission lines, and travel through the branch transmission lines to reach the user terminals. Noises mixed with the signals along the branch transmission lines can be a cause of Content-Signal/Noise ("C/N") reduction at the terminals, but might never cause a significant problem to the system.

On the other hand, upward signals from the user terminals to the center merge at the splitters as they go from the branch transmission lines to the main transmission line. Noises that are mixed into the signals at the terminals or along the branch transmission lines cover a wide range of frequencies including the signal frequency band, and are summed at the splitters as they merge, ending up being a cause of a significant C/N reduction.

If a user terminal is disconnected when, for example, a corresponding user moves out of a home, the branch transmission line ends up having an open end. The open end serves as a noise source by generating reflection noises, so that noises without signals may enter a splitter via the branch transmission line. In other cases, upward signals may include large noises because of malfunction at the user terminals. And again, these upward signal noises can cause significant problems at the center as they are summed at the splitters.

Thus, the main objective of the claimed invention is to provide a novel technique for reducing confluence noise in upward signals from user terminals to a head end center for two-way communications in a CATV system.

In one embodiment, the present invention provides "[a] system for reducing noise in a signal line['main transmission line 30,' Fig. 3, page 11, line 8 to page 14, line 4 of the specification], through which upward signals and downward signals are transmitted between a center and terminals['terminals 23' and 'main transmission line 30' to a center, Fig. 3, page

11, line 8 to page 14, line 4 of the specification; please see, also, 'center 201' and 'terminal 204' in Fig. 14, page 1, line 21 to page 3, line 15 of the specification], comprising:

a noise-reduction device ['confluence-noise-reduction device 25,' Fig. 3, page 11, line 8 to page 14, line 4 of the specification; please see, also, 'confluence-noise-level-check unit used in a confluence-noise reduction device,' Fig. 1, and 'confluence-noise-reduction unit used in the confluence-noise-reduction device,' Fig. 2, page 5, line 28 to page 11, line 7 of the specification], provided between the center and the terminals [between 'main transmission line 30' to a center and 'terminals 23,' Fig. 3, page 11, line 8 to page 14, line 4 of the specification; please see, also, page 6, lines 8-22 of the specification], which detects a noise increase regarding the upward signals on the signal line spontaneously without a noise measurement command from the center [Fig. 1, page 5, line 28 to page 9, line 1 of the specification] to generate a control signal indicative of the noise increase [Figs. 1-2, page 9, line 9 to page 11, line 7 of the specification], and is directly triggered by said control signal to insert a tone signal into the downward signals [Figs. 1-2, page 9, line 9 to page 11, line 7 of the specification] and to attenuate the upward signals by an increased amount without transmitting the control signal to the center [Figs. 1-2, page 9, line 9 to page 11, line 7 of the specification]; and

a noise-control device, provided at the terminals, which responds to the tone signal sent from the noise-reduction device by boosting a transmission level of the upward signals by an amount compensating for the attenuation of the upward signals by said noise-reduction device ['terminal 23,' Figs. 3-4, page 11, line 8 to page 15, line 9 of the specification]," as recited in claim 1.

Rejected claims 2-5 and 7 depend from claim 1, and are patentable over the references cited against them for at least the same reasons, as discussed in section (vii).

The present invention also provides "[t]he system as claimed in claim 1, wherein said noise-reduction device includes:

a unit which obtains a level of a signal component demodulated through coherent detection of the upward signals ['subtraction unit 71,' Fig. 6, page 17, lines 4-22; page 17, line 31 to page 18, line 13; and page 5, line 28 to page 8, line 21 of the specification];

a unit which obtains a level of a noise component demodulated through detection of noises observed on the signal line during a time period when no signal component is present ['noise-detection unit 67,' Fig. 6, page 17, lines 22-30 of the specification]; and

a check unit which makes a comparison between the level of the signal component and the level of the noise component, and detects a noise increase based on the comparison ['noise-level-comparison-check unit 68,' Fig. 6, page 18, lines 14-23 of the specification]," as recited in claim 6.

(vi) **Grounds of rejection to be reviewed on appeal**

1. Whether or not claims 1-5 and 7 are unpatentable under 35 U.S.C. § 103(a) for being obvious in view of U.S. Patent No. 3,750,022 to Curry et al. and U.S. Patent No. 5,987,069 to Furukawa et al.
2. Whether or not claim 6 is unpatentable under 35 U.S.C. § 103(a) for being obvious in view of Curry et al. and Furukawa et al., and further in view of U.S. Patent No. 6,385,773 to Schwartzman et al.

(vii) **Argument**

Issue 1: Whether or not claims 1-5 and 7 are unpatentable under 35 U.S.C. § 103(a) for being obvious in view of Curry et al. and Furukawa et al.

The Examiner contends that Curry et al. disclose the principal features of the claimed invention, as recited in claim 1. In particular, the Examiner argued that Curry et al. disclose the claimed noise-reduction device by describing, with reference to Fig. 1 thereof,

> "Noise Measuring Equipment (Noise-ME) 25[, located at a Head End (HE) 13, and] Line Control Circuit 'Line-CC' 27...provided between HE 13 'center' and a plurality of Phantom Subscribers (PH-Subs) 87, 57, 39 and 29 'terminals,' [that] detects a noise increase regarding the upstream 'upward' signals on the signal line and generates a control signal indicative of the noise increase, and is directly triggered by the control signal to insert a tone signal into the downstream signals and instructs Switchable Attenuators (SA) 35 to control attenuation of the upstream signals by an increased amount (col. 3, lines 24-41)." Page 4, lines 3-10 of the September 29, 2006 final Office Action. (Emphasis added)

To address the claimed feature of the noise-control device being "provided at the terminals," the Examiner relied upon the description in Curry et al. of an "alternate embodiment" of

> "the Noise-ME 25 [being] located at the PH-Sub 29 (col. 20, lines 12-19) to respond to the tone signal sent from the noise-reduction device by boosting a transmission level of the upward signals by an amount compensating for attenuation of the upward signals by the Noise-ME 25 or in other words to control the gain as a function of frequency across the bandwidth of either or both of the upstream and downstream amplifiers in its locality." Page 4, line 18 to page 5, line 1 of the September 29, 2006 final Office Action. (Emphasis added)

Appellants have consistently pointed out that the techniques described in Curry et al. fail to disclose or suggest the features of the claimed invention for which the Examiner relied upon Curry et al. as alleged disclosure, and that the Examiner altered the disclosure in Curry et al. based solely on improper hindsight from the claimed invention to support the claim

rejections. Furthermore, the Examiner has failed to establish a prima facie case of obviousness by failing to provide proper support for the proposed combination of references, Curry et al. and Furukawa et al. And even assuming, arguendo, that it would have been obvious to combine Curry et al. and Furukawa et al., such a combination would still have failed to disclose or suggest the claimed invention.

(a) Curry et al. do not disclose or suggest the claimed features in the manner relied upon by the Examiner.

Curry et al. describe a CATV system with conventional Head End noise measurement and noise reduction control. Curry et al. only describe, as its main embodiment, a Noise-ME 25 in Head End (HE) 13—or a "center"—of a CATV system measuring noise levels and issuing commands to a Line Control Circuit (Line-CC) 27 that includes a phantom subscriber (PH-Sub) 29 for signal attenuation and amplification based upon the measured noise levels. It is apparent from the description in Curry et al. that the Line-CC 27 and corresponding PH-Sub 29 is disposed between the HE 13 and a subscriber terminal 85. Thus, the main embodiment of Curry et al. only discloses a center measuring noise levels and issuing attenuation and amplification commands to a phantom subscriber disposed between the center and an end-user terminal.

Although Curry et al. describe—in the "alternate embodiment" relied upon by the Examiner—providing a Noise-ME 25 at each PH-Sub 29 (col. 20, lines 12-19 of Curry et al.), the Noise-ME 25 would still operate under the control of the LPC 16 at HE 13 by performing noise measurement according to instructions from the LPC 16 and transmitting the digitized noise measurement to the LPC 16 (please see, e.g., col. 20, lines 18-24 of Curry et al.). As such, since the Noise-ME 25 at each PH-Sub 29 would still monitor for a control signal from the head end 13 (LPC 16) to conduct noise measurements, the LPC 16 at the HE 13 would

still control noise measurement, signal attenuation, and signal amplification even if the Noise-ME 25 were situated in each PH-Sub 29.

Most notably, Curry et al. explicitly describe this "alternate embodiment" as including

> "each phantom subscriber in the system would include noise measuring equipment to monitor the upstream, and even downstream, noise at its location. On one command from the LPC 16, a phantom subscriber could cause a noise measurement to be made. Each phantom subscriber could also include a transmitter for transmitting the digitized noise measurement to the LPC 16 upon another command from the LPC 16. ." Col. 20, lines 16-24 of Curry et al. (Emphasis added)

Thus, with respect to the phantom subscribers (PH-Sub 29), Curry et al. do not disclose or suggest removing the LPC 16 as the command central for controlling and issuing commands to these phantom subscribers (PH-Sub 29) for any of the described noise measuring, and corresponding attenuation and amplification functions. And, as explicitly described in the above-cited portion of Curry et al., even if the Noise-ME 25 were moved to a PH-Sub 29, noise measurements would still be transmitted up to the LPC 16 upon another command from the LPC 16 for processing and corresponding attenuation and amplification commands from LPC 16.

But in the claim rejections, the Examiner improperly relied upon the PH-Sub 29 described in Curry et al. as alleged disclosure of the claimed noise-reduction device, provided between the center and the terminals, that issues a control signal, ***and, at the same time***, as alleged disclosure of the claimed noise-control device, provided at the terminals, that responds to a tone signal from the noise-reduction device.

For example, in response to Appellants' argument that Curry et al.—and the combining references—fail to disclose or suggest the claimed feature of a noise-control device, provided at the terminals, responding to a tone signal sent from the noise-reduction device, which is provided between the center and the terminals, the Examiner argued that

> "Curry teaches reserving frequency band in the downstream communications for pilot tone for system tests or control purposes (col. 3, line 51-col. 4, line 26). Curry further discloses that the Phantom Subscriber 29 monitors downstream digital transmissions (which includes the tone signal or waveform), extracts or recovers control data or waveforms encoded in the downstream transmission communications, and based on the extracted data, generates timing waveforms, applied this to the downstream signal to either un-attenuated or attenuate to a desired level before amplification (col. 4, line 40-col. 5, line 19, col. 6, lines 47-55 and col. 10, line 47-col. 11, line 35). The timing waveform that is applied to the downstream signals, which cause opening or closing of switches for either un-attenuated or attenuate to a desired level before amplification, is generated from the tone signal or waveform extracted or recovered from the downstream transmission communications. Hence, Curry teaches inserting tone signal in the downstream signal to boost a transmission level ***at the noise control device or PH-29***." (Emphasis added) Page 2, line 16 to page 3, line 7 of the September 26, 2006 final Office Action, which arguments were repeated verbatim in an Advisory Action dated May 3, 2007.

Thus, the Examiner improperly relied upon the "alternate embodiment" of the Noise-ME 25 being disposed in the PH-Sub 29 as alleged disclosure of a noise-reduction device being provided between the center and the terminals, and relied upon the same PH-Sub 29 as including a noise-control device that is provided at the terminals, and which responds to a tone signal to boost a transmission level—the tone signal being triggered by a noise increase detected by the Noise-ME 25.

Appellants respectfully submit that Curry et al. describe the signal generated by Noise-ME 25, for the embodiment where it is "located at the PH-Sub 29," being transmitted to LPC 16, which returns a control signal back to Line-CC 27/PH-Sub 29 for signal attenuation. Col. 20, lines 15-24 of Curry et al. As such, Curry et al. clearly describe a measurement signal that is forwarded to LPC 16 that, in turn, issues a control signal back to Line-CC 27/PH-Sub 29 for signal attenuation. And thus, Curry et al., as cited and relied upon by the Examiner, do not disclose a noise-reduction device—provided between the center and

the terminals—that detects noise increase to generate a control signal and is directly triggered by the generated control signal to attenuate upward signals without transmitting the control signal to the center and to insert a tone signal into a downward signal; and, at the same time, a noise-control device—provided at the terminals—boosting a transmission level in response to the tone signal.

In other words, Curry et al., as cited and relied upon by the Examiner, fail to disclose or suggest,

> "[a] system for reducing noise in a signal line, through which upward signals and downward signals are transmitted ***between a center and terminals***, comprising:
>
> a noise-reduction device, ***provided between the center and the terminals***, which detects a noise increase regarding the upward signals on the signal line spontaneously without a noise measurement command from the center to generate a control signal indicative of the noise increase, and is directly triggered by said control signal to insert a tone signal into the downward signals and ***to attenuate the upward signals by an increased amount*** without transmitting the control signal to the center; and
>
> a noise-control device, ***provided at the terminals***, which responds to the tone signal sent from the noise-reduction device by boosting a transmission level of the upward signals by an amount ***compensating for the attenuation of the upward signals by said noise-reduction device***," as recited in amended claim 1. (Emphasis added)

The Examiner has conceded that Curry et al. do not disclose the claimed features of the noise-reduction device "provided between the center and the terminals" performing functions "without a noise measurement command from the center," and triggered by the generated control signal "without transmitting the control signal to the center." The Examiner cited Furukawa et al. as a combining reference that allegedly suggests these features.

Appellant respectfully submits that it would not have been obvious to one skilled in the art at the time the claimed invention was made to combine Curry et al. and Furukawa et

al. in the manner proposed by the Examiner. Appellant further submits that even assuming, arguendo, that it would have been obvious to combine Curry et al. and Furukawa et al., such a combination would still have failed to disclose or suggest the claimed invention.

(b) It would not have been obvious to combine Curry et al. and Furukawa et al. in the manner proposed by the Examiner.

Furukawa et al. describe a technique for allocating upstream and downstream portions of a frequency spectrum based on line conditions, such as noise and interference, using a bidirectional transceiver in a copper-wire telephone network system that may include Plain Old Telephone Service ("POTS") and digital subscriber line ("DSL") services ("same copper wire"). Col. 1, line 35 of Furukawa et al. The technique described in Furukawa et al. is in the context of, for example, an Asymmetric DSL ("ADSL") system where "more of the available frequency spectrum [is allocated] to the downstream direction." Col. 1, line 58-59 of Furukawa et al.

In combining the references, the Examiner merely stated that

> "it would have been obvious to one or ordinary skill in the art at the time of the invention to incorporate the teaching of Furukawa into the system of dynamically detect other noise signals, such as co-channel interference from neighboring upstream or downstream channels and attenuate the signals accordingly to provide an efficient system." Page 6, lines 3-7 of the September 29, 2006 final Office Action.

Appellants respectfully submit that Furukawa et al. already describe a distinct frequency allocating technique for addressing line conditions, such as noise. Please see, e.g., the Abstract of Furukawa et al. And the Examiner has failed to establish a prima facie case of obviousness by failing to clearly provide the suggestion or motivation for combining Curry et al. and Furukawa et al. in the manner proposed.

Appellants refer to MPEP § 2141(III), which requires:

> "The key to supporting any rejection under 35 U.S.C. 103 is the clear articulation of the reason(s) why the claimed invention would have been obvious. The Supreme Court in KSR noted that the analysis supporting a rejection under 35 U.S.C. 103 ***should be made explicit***. The Court quoting In re Kahn, 441 F.3d 977, 988, 78 USPQ2d 1329, 1336 (Fed. Cir. 2006), stated that "'[R]ejections on obviousness cannot be sustained by mere conclusory statements; instead, there must be some articulated reasoning with some rational underpinning to support the legal conclusion of obviousness.'" KSR, 550 U.S. at ___, 82 USPQ2d at 1396." (Emphasis added)

This requirement is reiterated in MPEP § 2143.01, where the following is added:

> **"IV.*>MERE STATEMENT< THAT THE CLAIMED INVENTION IS WITHIN THE CAPABILITIES OF ONE OF ORDINARY SKILL IN THE ART IS NOT SUFFICIENT BY ITSELF TO ESTABLISH PRIMA FACIE OBVIOUSNESS**
>
> A statement that modifications of the prior art to meet the claimed invention would have been "'well within the ordinary skill of the art at the time the claimed invention was made'" because the references relied upon teach that all aspects of the claimed invention were individually known in the art is not sufficient to establish a prima facie case of obviousness without some objective reason to combine the teachings of the references. Ex parte Levengood, 28 USPQ2d 1300 (Bd. Pat. App. & Inter. 1993)." (Emphasis added)

The Examiner has not provided any articulated reasoning with rational underpinning to support the legal conclusion of obviousness. The Examiner has not provided any motivation or suggestion, with evidentiary support or explicit analysis, for combining the signal attenuation and amplification technique described in Curry et al. for a CATV system having defined upstream and downstream bands and carriers—please see col. 3, line 59 to col. 4, line 31 of Curry et al.—with the DSL frequency allocation technique described in Furukawa et al. that includes explicit description of implementing "robust carrier acquisition, recovery and lock." Abstract of Furukawa et al. Thus, the Examiner clearly exercised improper hindsight from the claimed invention by using it as a template for combining Curry et al. and Furukawa in the manner proposed.

Again, Curry et al. and Furukawa each describe a technique for an alternative communication services system with distinct objectives specific to the respective alternative communication services systems. Curry et al. describe a CATV system with conventional Head End noise measurement and noise reduction control for controlling signal attenuation and amplification, whereas Furukawa et al. describe a frequency allocation technique to address line conditions, such as background noise, for a telephone network system having dynamic upstream and downstream frequencies. And the Examiner has not provided any support or analysis on the motivation or suggestion to combine these techniques or how such disparate techniques would even be compatible for any stated objective.

Accordingly, Appellants respectfully submit that the Examiner has failed to demonstrate that it would have been obvious to one skilled in the art at the time the claimed invention was made to combine Curry et al. and Furukawa et al., and that the Examiner has failed to establish a prima facie case of obviousness.

Even assuming, arguendo, that it would have been obvious to one skilled in the art at the time the claimed invention was made to combine Curry et al. and Furukawa et al., such a combination would still have, at most, suggested an end-to-end noise measurement and reduction technique, and would have failed to disclose the claimed structural features of the noise-reduction device and noise-control device.

(c) The combination of Curry et al. and Furukawa et al. would still have failed to disclose or suggest the claimed invention even assuming such a combination would have been obvious.

The Examiner, again, conceded that Curry et al. do not disclose the claimed features of the noise-reduction device "provided between the center and the terminals" performing functions "without a noise measurement command from the center," and triggered by the

generated control signal "without transmitting the control signal to the center"; and cited Furukawa et al. as a combining reference that allegedly suggests these features.

The cited portions of Furukawa et al.—the Examiner cited Figs. 3-7 and col. 3, line 49-col. 4, line 7, col. 4, line 31-col. 5, line 4, col. 11, lines 13-23, col. 13, lines 5-30, and col. 15, line 41-col. 16, line 10 of Furukawa et al. on page 5, line 16 to page 6, line 2 of the September 29, 2006 final Office Action—only include, however, description of a transceiver for end-to-end line condition-based frequency allocation, and corresponding "carrier acquisition, recovery and lock" features. Namely, such portions of Furukawa et al. do not include any disclosure or suggestion of any network structure features, and, more particularly, any element or transceiver that is provided between a center and terminals, which performs functions independent of the center "without a noise measurement command from the center" and triggering signal attenuation and a downward tone signal "without transmitting a control signal to the center"; and a corresponding device, provided at the terminals, responding to the downward tone signal by boosting a transmission level.

Thus, a combination of Curry et al. and Furukawa et al. would still have failed to disclose or suggest,

> "[a] system for reducing noise in a signal line, through which upward signals and downward signals are transmitted ***between a center and terminals***, comprising:
>
> a noise-reduction device, ***provided between the center and the terminals***, which detects a noise increase regarding the upward signals on the signal line spontaneously without a noise measurement command from the center to generate a control signal indicative of the noise increase, and is directly triggered by said control signal to insert a tone signal into the downward signals and ***to attenuate the upward signals by an increased amount without transmitting the control signal to the center***; and
>
> a noise-control device, ***provided at the terminals***, which responds to the tone signal sent from the noise-reduction device by boosting a transmission level of the upward signals by an amount ***compensating for the attenuation of the upward***

signals by said noise-reduction device," as recited in amended claim 1. (Emphasis added)

Accordingly, Appellant respectfully submits that independent claim 1 incorporating the above-cited features is patentable over Curry et al. and Furukawa et al. for at least the foregoing reasons. And dependent claims 2-5 and 7 are patentable over the cited references for at least the same reasons.

Issue 2: Whether or not claim 6 is unpatentable under 35 U.S.C. § 103(a) for being obvious in view of Curry et al., Furukawa et al., and Schwartzman et al.

The Examiner relied upon Schwartzman et al. as a combining reference to specifically address the additional features recited in claim 6, which depends from based claim 1 discussed above.

In particular, the Examiner conceded that even a combination of Curry et al. and Furukawa et al. would have failed to suggest the feature of "obtaining a level of noise 'through detection of noises observed on the signal line during a time period when no signal component is present'" recited in claim 6. Page 5, lines 20-22 of the September 26, 2006 final Office Action (citing claim 6). Accordingly, the Examiner cited and relied upon Schwartzman et al. as a combining reference to specifically address this deficiency of the combination of Curry et al. and Furukawa et al. with respect to claim 6.

Therefore, even assuming, arguendo, that the additional combination of Schwartzman et al. would have been obvious to one skilled in the art at the time the claimed invention was made, such an additional combination would still have failed to cure the above-described deficiencies of Curry et al. and Furukawa et al. with respect to base claim 1, from which claim 6 depends. For at least this reason, claim 6 is patentable over the cited references.

CONCLUSION

Claims 1-5 and 7 are not obvious in view of Curry et al. and Furukawa et al., and, correspondingly, claim 6 is not obvious in view of Curry et al., Furukawa et al., and Schwartzman et al. Accordingly, Appellants respectfully submit that the Examiner erred in rejecting claims 1-7, and earnestly request that this Honorable Board reverse the Examiner's rejections.

Respectfully submitted,

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(viii) **Claims Appendix**

1. A system for reducing noise in a signal line, through which upward signals and downward signals are transmitted between a center and terminals, comprising:

a noise-reduction device, provided between the center and the terminals, which detects a noise increase regarding the upward signals on the signal line spontaneously without a noise measurement command from the center to generate a control signal indicative of the noise increase, and is directly triggered by said control signal to insert a tone signal into the downward signals and to attenuate the upward signals by an increased amount without transmitting the control signal to the center; and

a noise-control device, provided at the terminals, which responds to the tone signal sent from the noise-reduction device by boosting a transmission level of the upward signals by an amount compensating for the attenuation of the upward signals by said noise-reduction device.

2. The system as claimed in claim 1, wherein said noise-reduction device includes:

a noise-level-check unit which makes a comparison between a signal component and a noise component that are obtained from the signal line, and detects a noise increase based on the comparison; and

a noise-reduction unit which includes an attenuator that attenuates the upward signals by the increased amount if said noise-level-check unit detects the noise increase, and which transmits a tone signal via the downward signals if said noise-level-check unit detects the noise increase.

3. The system as claimed in claim 2, wherein said noise-control device includes:

a tone-detection unit which detects the tone signal; and

a variable amplifier which boosts amplification of the upward signals by an amount compensating for the attenuation of the upward signals by said attenuator.

4. The system as claimed in claim 1, wherein one or more noise-reduction devices including said noise-reduction device are provided in one or more of a two-way-amplification unit and splitter units provided between the center and the terminals.

5. The system as claimed in claim 4, wherein said noise-control device boosts the transmission level of the upward signals by an amount compensating for a total attenuation of the upward signals by all of said one or more noise-reduction devices.

6. The system as claimed in claim 1, wherein said noise-reduction device includes:

a unit which obtains a level of a signal component demodulated through coherent detection of the upward signals;

a unit which obtains a level of a noise component demodulated through detection of noises observed on the signal line during a time period when no signal component is present; and

a check unit which makes a comparison between the level of the signal component and the level of the noise component, and detects a noise increase based on the comparison.

7. The system as claimed in claim 1, wherein said noise-reduction device includes:

a unit which obtains a level of a signal component demodulated through coherent detection of the upward signals;

a unit which obtains a level of a signal and noise components demodulated through detection of a high-frequency signal included within a frequency range of the upward signals;

a subtraction unit which obtains a noise level as a difference between the level of the signal component and the level of the signal and noise components; and

a check unit which compares the noise level with one of a reference level and the level of the signal component, and detects a noise increase based on the comparison.

(ix) **Evidence Appendix**

No evidence was submitted to or entered by the Examiner during prosecution of this application.

(x) **Related Proceedings Appendix**

Upon information and belief, there are no other appeals or interferences, which will directly affect or be directly affected by or have a bearing on the Board's decision in this appeal.